KUCHERENKO, Vladimir Alekseyevich; PODGORNOVA, V., red.; DANILINA, A.,
tekhn.red.

[Plan of great projects; capital construction in 1959-1965]
Plan velikikh rabot; kapital'noe stroitel'stvo v 1959-1965 gg.
Moskva, Gos.izd-vo polit.lit-ry, 1959. 94 p. (MIRA 13:2)

1. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury
SSSR, predsedatel' Gosstroya SSSR (for Kucherenko).
(Russia--Economic policy)

BESHCHEV, Boris Pavlovich; PODGORNOVA, V., red.; DANILINA, A., tekhn.red.

[Soviet railroad transportation during the period from 1959 to 1965] Zheleznodorozhnyi transport SSSR v 1959-1965 gg. Moskva, Gos.izd-vo polit.lit-ry, 1960. 107 p. (MIRA 13:6)

1. Ministr putey soobshcheniya (for Beshchev).
(Railroads)

BUNICH, Pavel Grigor'yevich; PODGORNOVA, V., red.; MUKHIN, Yu.,
tekhn.red.

[Revaluation of capital assets] Pereotsenka osnovnykh fondov.
Moskva, Gos.izd-vo polit.lit-ry, 1959. 161 p. (MIRA 12:11)
(Valuation)

SHAMBERG, Vladimir Mikhaylovich; PODGORNOVA, V., red.; MUKHIN, Yu., tekhn.red.

[For whom does time work; ten questions and answers about the seven-year plan and the economic competition between the U.S.S.R. and the United States] Na kogo rabotaet vremia; 10 voprosov i otvetov o semiletke i ekonomicheskom sorevnovanii mezhdu SSSR i SShA. Moskva, Gos.izd-vo polit.lit-ry, 1959. 63 p. (MIRA 12:11)

(Russia--Foreign relations--United States)
(Russia--Economic policy)

LEONIDOV, Rem Leonidovich; PODGORNOVA, V., red.; TROYANOVSKAYA, N., tekhn.red.

[Irreplaceable substitutes] Nezamenimye zameniteli. Moskva, Gos. izd-vo polit. lit-ry, 1958. 63 p. (MIRA 12:2)
(Plastics)

PODGORNOVA, V.

IVANOV, N.A.; KUTSENOVA, A., red; PODGORNOVA, V., red.; TROYANOVSKAYA, N., tekhn.red.

[Ways of accelerating building operations] Puti uskoreniia stroitel'stva. Moskva, Gos.izd-vo polit.lit-ry, 1957. 174 p. (MIRA 11:2)
(Building)

GORSHUNOV, M.D., otv.red.; PODGORNOVA, V., red.; KAPLAN, I., red.;
TROYANOVSKAYA, N., tekhn.red.

[Conversion of enterprises to a seven- and six-hour workday during 1956-1958] Iz opyta perekhoda promyshlennykh predpriiatii na semi- i shestichasovoi rabochii den' v 1956-1958 gg. Moskva, Gos.izd-vo polit.lit-ry, 1959. 145 p. (MIRA 12:3)

1. Moscow. Nauchno-issledovatel'skiy institut truda.
(Hours of labor)

SHEYN, P.A.; KURSKIY, A., redaktor; PODGORNOVA, V., redaktor; PIOTROVICH, M., tekhnicheskiy redaktor

[Supplying a socialist industrial enterprise with technical materials] Material'no-tekhnicheskoe snabzhenie sotsialisticheskogo promyshlennogo predpriiatiia. Moskva, Gos. izd-vo polit. lit-ry, 1954. 359 p. (MIRA 8:3)

(Materials)

KAMENITSER, Solomon Yefremovich; PODGORNOVA,V., redaktor; TROYANOVSKAYA,N., tekhnicheskiy redaktor

[Potentials for increasing work productivity in industrial enterprises; methods of finding and ways of using resources] Rezervy rosta proizvoditel'nosti truda na promyshlennykh predpriiatiiakh; metody vyiavleniia i puti ispol'zovaniia rezervov. Moskva, Gos. izd-vo polit. lit-ry, 1955. 230 p. (MLRA 9:2)
(Efficiency, Industrial)

KONTOROVICH, Veniamin Gamsheyevich; PODGORNOVA, V., redaktor; DANILINA, A., tekhnicheskiy redaktor.

[Technical and economic planning in industrial enterprises; methods and calculations] Tekhniko-ekonomicheskoe planirovanie na promyshlennom predpriatii; metodika i raschety. Moskva, Gos.izd-vo polit. literatury, 1955. 367 p. (MLRA 9:4)

(Industrial organization)

BAKLANOV, Gleb Ivanovich; PODGORNOVA,V., redaktor; KOZLOVA,M., redaktor;
MUKHIN,Yu., tekhnicheskiy redaktor

[Analyzing the economic activities of industrial enterprises]
Analiz khoziaistvennoi deiatel'nosti promyshlennogo predpriiatiia
Moskva, Gos.izd-vo polit. lit-ry, 1956. 83 p. (MIRA 9:4)
(Industrial management)

ROZHANSKIY, Abram Isaakovich; PODGORNOVA, V., redaktor; MUKHIN, Yu., tekhnicheskiy redaktor.

[Auxiliary materials and possibilities for their exploitation] Vspomogatel'nye materialy i rezervy ikh ispol'zovaniia. Moskva. Gos.izd-vo polit.lit-ry, 1956. 133 p. (MIRA 9:2)
(Factory management)

PODGORNOVA, V.

KULEV, Iliodor Anatol'yevich; PODGORNOVA, V., redaktor; TROYANOVSKAYA, N.,
tekhnicheskiy redaktor

[Electrification of the U.S.S.R. in the sixth five-year plan]
Elektrifikatsiia SSSR v shestoi piatiletke. Moskva, Gos.izd-vo
polit.lit-ry, 1957. 94 p. (MIRA 10:7)
(Electrification)

DYNINA, Mariya Aleksandrovna, dots.; PODGORNOVA, V., red.; MUKHIN, Yu., tekhn. red.

[The organization of workers' wages] Kak organizovana zarabotnaia plata rabochikh. Moskva, Gos.izd-vo polit.lit-ry, 1961. 46 p. (MIRA 14:12)

1. Moskovskaya vysshaya partiynaya shkola (for Dynina).
(Wage payment systems)

YEFIMOV, Anatoliy Nikolayevich; PODGORNOVA, V., red.; DANILINA, A.,
tekhn.red.

[Prospects for the development of industry in the U.S.S.R.]
Perspektivy razvitiia promyshlennosti SSSR. Moskva, Gos.
izd-vo polit.lit-ry, 1959. 110 p. (MIRA 12:9)

1. Direktor Nauchno-issledovatel'skogo ekonomicheskogo instituta
Gosplana SSSR (for Yefimov).
(Russia--Industries)

NIKOLAYEV, Arseniy Ivanovich; PODGORNOVA, V., redaktor; PIOTROVICH,M., tekhnicheskiy redaktor

[House construction in the sixth five-year plan] Zhilishchnoe stroitel'stvo v shestoi piatiletke. Moskva, Gos. izd-vo polit. lit-ry, 1956. 95 p. (MIRA 9:11)
(Housing) (Construction industry)

PODGORNOVA, V., red.; TROYANOVSKAYA, N., tekhn.red.

[Program for construction economics for economic schools and circles and seminars of schools of party education] Programma po ekonomike stroitel'stva dlia ekonomicheskikh shkol, kruzhkov i seminarov seti partiinogo prosveshcheniia. Moskva, Gos.izd-vo polit.lit-ry, 1959. 22 p. (MIRA 13:1)

1. Kommunisticheskaya partiya Sovetskogo Soyuza. Vysshaya partiynaya shkola. Kafedra sovetskoy ekonomiki.
(Construction industry)

BUNIMOVICH, Vul'f Abramovich, kand. ekon. nauk, dotsent; PODGORNOVA, V., red.; MUKHIN, Yu., tekhn. red.

[Cost of industrial production and techological progress] Sebestoimost' promyshlennoi produktsii i tekhnicheskii progress. Moskva, Gospolitizdat, 1962. 294 p. (MIRA 15:6)

1. Moskovskiy ordena Trudovogo Krasnogo Znameni instituta narodnogo khozyaystva imeni G.V.Plekhanova (for Bunimovich).
(Costs, Industrial) (Efficiency, Industrial)

ACCESSION NR: AT4029922 S/3087/62/001/000/0079/0089

AUTHOR: Ustavshchikov, B. F.; Farberov, M. I.; Podgornova, V. A.

TITLE: Technical synthesis of methacrylic acid based on isobutylene

SOURCE: Yaroslavl'. Tekhnologicheskiy institut. Khimiya i khimicheskaya tekhnologiya, vol. 1 (8), 1962, 79-89

TOPIC TAGS: methacrylic acid, isobutylene, synthesis, monomer, nitrogen tetroxide, nitrosation, isobutyric acid

ABSTRACT: Methacrylic acid and its derivatives are one of the most important monomers for the production of synthetic materials. The requirements for methacrylic derivatives, in the Soviet Union alone, will increase ten fold within the next 20 years. Currently there is one method of obtaining methacrylic acid and methyl methacrylate based on the use of acetone and hydrogen cyanide as an initial raw material. The authors conducted a detailed study of the method for obtaining methacrylic acid from isobutylene and nitrogen tetroxide. The reaction was shown graphically along with the various effects of temperature and velocity on the yield. Diagrams of the equipment used were given. The conditions of the isobutylene reaction with nitrogen tetroxide produced α-oxybutyric acid with a 75-80% yield as a

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ACCESSION NR: AT4029922

basic product. A nitrosation reaction occurred rather than a nitration reaction. The fundamental intermediate product of the reaction, α-nitrate isobutyric acid was formed from the isonitroso compound-oxime of α-nitrato isobutyric aldahyde. The catalyst and conditions were selected which permitted methacrylic acid to be obtained from α-oxyisobutyric acid with a yield approximating the quantitative. Orig. art. has: 6 figures.

ASSOCIATION: Yaroslavskiy tekhnologicheskiy institut i nauchno-issledovatel'skiy institut monomerov dlya SK (NIIMK) (Yaroslavl technological institute and scientific research institute of monomers for SK (NIIMK)).

SUBMITTED: 00 DATE ACQ: 29Apr64 ENCL: 00

SUB CODE: CH NO REF SOV: 006 OTHER: 006

Card 2/2

S/204/62/002/004/015/019
E075/E436

AUTHORS: Ustavshchikov, B.F., Farberov, M.I., Podgornova, V.A.

TITLE: Synthesis of methacrylic acid from isobutylene

PERIODICAL: Neftekhimiya, v.2, no.4, 1962, 592-599

TEXT: A description is given of a new method of preparation of methacrylic acid from isobutylene and N_2O_4. Gaseous isobutylene is passed through liquid N_2O_4 giving mainly α-nitratoisobutyric acid. Hydrolysis of this product gives α-oxyisobutyric acid. The hydrolysis proceeds best at 100°C and is carried out with water or dilute HNO_3. It was found that the yield of α-oxyisobutylic acid at 10°C increases when the ratio of isobutylene to N_2O_4 increases from 1:2 to 1:4, the maximum yield being about 80%. The yield is not affected by temperature in the range of -10 to +20°C. It is shown that the reaction is that of nitroso-compound formation and not nitration. The intermediate reaction product, α-nitratoisobutyric acid, is formed from the oxime of α-nitratoisobutyric aldehyde. A new catalyst was developed - a mixture of calcium phosphates - on which α-oxyisobutyric acid is dehydrated to metacrylic acid. The catalyst is precipitated by adding a solution of $(NH_4)_2HPO_4$ in

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S/204/62/002/004/015/019
E075/E436

Synthesis of methacrylic acid ...

NH_4OH to solutions of $CaNO_3$ and $CaCl_2$. It is dried at 110 to 120°C and activated and regenerated at 350 to 400°C in an air-steam mixture. The dehydration is achieved by passing 20 to 30% aqueous solution of α-oxyisobutyric acid over the catalyst at 250 to 300°C. The products contain 10 to 15% methacrylic acid. The yield increases with increasing temperature up to 250°C, which is the optimum temperature for the process. The optimum space velocity for α-oxyisobutyric acid is about 1.3 litres/litre of catalyst/hour. These conditions give 77.7% yield of methacrylic acid (based on the amount of α-oxyisobutyric acid passed). There are 4 figures.

ASSOCIATIONS: Yaroslavskiy tekhnologicheskiy institut
(Yaroslavl' Technological Institute)
Nauchno-issledovatel'skiy institut monomerov dlya SK
(Scientific Research Institute of Monomers for
Synthetic Rubber)

Card 2/2

Podgornova, V.M.

ABRAMOV, V.A.; ALEKSEYEV, A.N.; AL'TER, L.B.; ARAKELYAN, A.A.; BAKLANOV, G.I.; BASOVA, I.A.; BLYUMIN, I.G.; BOGOMOLOV, O.T.; BOR, M.Z.; BREGEL', E.Ya.; VEYTSMAN, N.R.; VIKENT'YEV, A.I.; GAL'TSOV, A.D.; GERTSOVSKAYA, B.R.; GLADKOV, I.A.; DVORKIN, I.N.; DRAGILEV, M.S.; YEFIMOV, A.N.; ZHAMIN, V.A.; ZHUK, I.N.; ZAMYATNIN, V.N.; IGNAT'YEV, D.I.; IL'IN, M.A.; IL'IN, S.S.; IOFFE, Ya.A.; KAYE, V.A.; KAMENITSER, S.Ye.; KATS, A.I.; KLIMOV, A.G.; KOZLOV, G.A.; KOLGANOV, M.V.; KONTOROVICH, V.G.; KRAYEV, M.A.; KRONROD, Ya.A.; LAKHMAN, I.L.; LIVANSKAYA, F.V.; LOGOVINSKAYA, R.L.; LYUBOSHITS, L.I.; MALYSH, A.I.; MENZHINSKIY, Ye.A.; MIKHAYLOVA, P.Ya.; MOISEYEV, M.I.; MOSKVIN, P.M.; NOTKIN, A.I.; PARTIGUL, S.P.; PERVUSHIN, S.P.; PETROV, A.I.; PETRUSHOV, A.M.; PODGORNOVA, V.M.; RABINOVICH, M.A.; RYVKIN, S.S.; RYNDINA, M.N.; SAKSAGANSKIY, T.D.; SAMSONOV, L.N.; SMEKHOV, B.M.; SOKOLIKHIN, S.I.; SOLLERTINSKAYA, Ye.I.; SUDARIKOV, A.A.; TATAR, S.K.; TERENT'YEV, P.V.; TYAGAY, Ye.Ya.; FEYGIN, Ya.G.; FIGURNOV, P.K.; FRUMKIN, A.B.; TSYRLIN, L.M.; SHAMBERG, V.M.; SHAPIRO, A.I.; SHCHENKOV, S.A.; EYDEL'MAN, B.I.; EKHIN, P.E.; MITROFANOVA, S., red.; TROYANOVSKAYA, N., tekhn.red.

[Concise dictionary of economics] Kratkii ekonomicheskii slovar'. Moskva, Gos.izd-vo polit.lit-ry, 1958. 391 p. (MIRA 11:7)
(Economics--Dictionaries)

TALIPOV, Sh.T.; PODGORNOVA, V.S.

Investigating solubility in the system PbF_2 - $PbCl_2$ - H_2O at 25 . Uzb.khim.zhur. no.2:25-31 '61. (MIRA 14:10)

1. Tashkentskiy gosudarstvennyy universitet imeni V.I.Lenina.
(Lead halides) (Systems (Chemistry))

PODGORNOVA, V.S.; TALIPOV, Sh.T.

Solubility in the system PbF_2 - $PbBr_2$ - H_2O at 25°C. Uzb.khim.zhur. 6 no.2:12-16 '62. (MIRA 15:7)

1. Tashkentskiy gosudarstvennyy universitet imeni V.I. Lenina.

(Lead halides)
(Solubility)

TALIPOV, Sh.T.; PODGORNOVA, V.S.

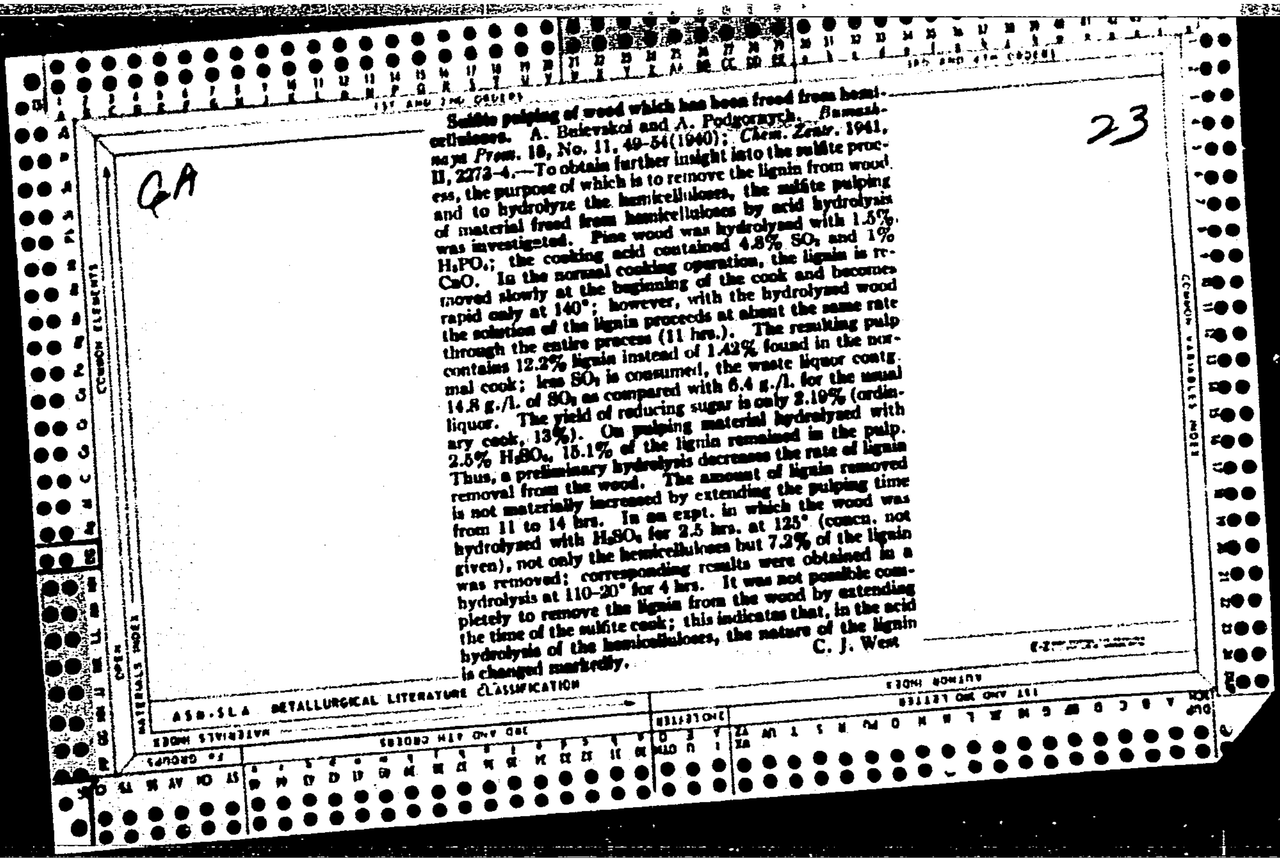
Analyzing the mixture of certain anions using the reaction of lead fluoride halide formation. Dokl. AN Uz.SSR 21 no. 10: 41 '64 (MIRA 19:1)

1. Tashkentskiy gosudarstvennyy universitet imeni Lenina. Submitted February 4, 1963.

TALIPOV, Sh.T.; PODGORNOVA, V.S.; ZININA, G.N.

Solubility in the system $Be(NO_3)_2$ - Pb FBr - H_2O at 25 .
Uzb.khim.zhur. no.4:11-16 '61. (MIRA 14:8)

1. Tashkentskiy gosudarstvennyy universitet imeni V.I.Lenina.
(Systems (Chemistry)) (Solubility)



QA

23

Sulfite pulping of wood which has been freed from hemicelluloses. A. Beievskoi and A. Podgornych. *Bumazhnaya Prom.* 18, No. 11, 49-54(1940); *Chem. Zentr.* 1941, II, 2273-4.—To obtain further insight into the sulfite process, the purpose of which is to remove the lignin from wood and to hydrolyze the hemicelluloses, the sulfite pulping of material freed from hemicelluloses by acid hydrolysis was investigated. Pine wood was hydrolyzed with 1.5% H_3PO_4; the cooking acid contained 4.8% SO_2 and 1% CaO. In the normal cooking operation, the lignin is removed slowly at the beginning of the cook and becomes rapid only at 140°; however, with the hydrolyzed wood the solution of the lignin proceeds at about the same rate through the entire process (11 hrs.). The resulting pulp contains 12.2% lignin instead of 1.42% found in the normal cook; less SO_2 is consumed, the waste liquor contg. 14.8 g./l. of SO_2 as compared with 6.4 g./l. for the usual liquor. The yield of reducing sugar is only 2.19% (ordinary cook, 13%). On pulping material hydrolyzed with 2.5% H_2SO_4, 15.1% of the lignin remained in the pulp. Thus, a preliminary hydrolysis decreases the rate of lignin removal from the wood. The amount of lignin removed is not materially increased by extending the pulping time from 11 to 14 hrs. In an expt. in which the wood was hydrolyzed with H_2SO_4 for 2.5 hrs. at 125° (concn. not given), not only the hemicelluloses but 7.2% of the lignin was removed; corresponding results were obtained in a hydrolysis at 110-20° for 4 hrs. It was not possible completely to remove the lignin from the wood by extending the time of the sulfite cook; this indicates that, in the acid hydrolysis of the hemicelluloses, the nature of the lignin is changed markedly.

C. J. West

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

CA

23

Sulfite cooking of wood freed from hemicelluloses. A. Buevskii and A. Podgornykh. *Bumazhnaya Prom.* 1940, No. 11, 49-54; *Khim. Referat. Zhur.* 4, No. 7-8, 117 (1941).—In order to study separately the hydrolysis of hemicelluloses and the delignification of wood, sawdust was hydrolyzed by boiling with a reflux condenser with 1.5% H_3PO_4 or 2% H_2SO_4 before cooking with sulfite liquor. Preliminary hydrolysis of hemicelluloses resulted in a retardation of delignification by sulfite cooking. Increasing the time of cooking to 14 hrs. did not produce satisfactory results. The expts. indicate that the nature of lignin changed considerably by the acid hydrolysis.

W. R. Hess

COMMON ELEMENTS

MATERIALS INDEX

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

AUTHOR INDEX

MALEV, I. [Maliev, Y.]; PODGORNYI, I. [Podhornyi, I.]

Wires run into the distance. Znan. ta pratsia no.5:2-4 My '62.
(MIRA 15:6)

(Electric power distribution--Research)

VINOGRADOV, A.N.; LIVSHIN, G.L.; OBRAZTSOVA, R.I.; TULUPOV, L.P.; Prinimali uchastiye: RAZORENOVA, L.K., inzh.; DUBINKINA, L.I., inzh.; PODGORNYKH, A.L., inzh.; LAVRENT'YEV, M.V., retsenzent; MINAKOV, A.D., retsenzent; NESTEROV, Ye.P., retsenzent; STEFANOV, N.Ya., retsenzent; USHAKOV, P.S., retsenzent; KRISHTAL', L.I., red.; KHITROVA, N.A., tekhn. red.

[Calculating machines in accounting, planning and administration in railroad transportation] Vychislitel'naia tekhnika v uchete, planirovanii i upravlenii na zheleznodorozhnom transporte. [By] A.N.Vinogradov i dr. Moskva, Transzheldorizdat, 1963. 407 p. (MIRA 17:2)

PODGORNYKH, V.A.

Some improvements in the technology of recording earthquakes. Trudy Inst.seism.stroi.i seism 10:157-160 '62. (MIRA 16:5)

(Seismometers)

MIKHAYLENKO, V., kand. tekhn. nauk, dots.; PODGORNYY, A., prepodavatel'.

Textbook that should be revised. Prof.-tekh. obr. 15 no.4:30-31
Ap '58. (MIRA 11:5)

1. Kiyevskoye inzhenerno-stroitel'noye institut (for Mikhaylenko).
(Blueprints)

PODGORNY, E.

PODGORNY, EDWARD.

POM Przelek. Warszawa, Panstwowe Wydawn. Rolnicze i Lesne, 1955. 139 p. (The Przelek Machine-Tractor Station) DA Not in DLC Poland

SO: MONTHLY INDEX OF EAST EUROPEAN ACCESSIONS (EEAI) LC, VOL. 7, NO. 1, JAN. 1958

PODGORNYY, A.

27-4-22/25

AUTHORS: Mikhaylenko, V., Candidate of Technical Sciences, Dotsent at the Kiyev Building Engineering Institute, and Podgornyy, A., Instructor

TITLE: A Text-book Which Must Be Revised (Posobiye nuzhdayetsya v pererabotke)

PERIODICAL: Professional'no-Tekhnicheskoye Obrazovaniye, 1958, # 4, pp 30-31 (USSR)

ABSTRACT: This is a review of A.D. Krasil'nikov's book "The Reading of Structural Diagrams" (Chteniye stroitel'nykh chertezhey), condemned for minor errors. Also too much time is spent on "How to Draw" instead of on "How to Read Drawings".

ASSOCIATION: Kiyevskiy inzhenerno-stroitel'nyy institut (Kiyev Building Engineering Institute)

AVAILABLE: Library of Congress

Card 1/1

PODGORNYY A.G.

127-12-25/28

AUTHOR: Podgornyy, A.G., Chief Geologist of the Sumsar Mine

TITLE: Conference of the Readers of the "Gornyy Zhurnal" (Konferentsiya chitateley Gornogo zhurnala)

PERIODICAL: Gornyy Zhurnal, 1957, No 12, p 70 (USSR)

ABSTRACT: A conference of "Gornyy Zhurnal" readers attended by 50 persons took place in the Sumsarskiy Mine in Kirghizia. It was organized by the technical library and scientific-technical society of the mine. The participants pointed out both positive and negative features in the Gornyy Zhurnal, stressing the insufficient attention paid by the Journal to geological problems and unsatisfactory contact of the Editorial Board with the industrial enterprises.

ASSOCIATION: Council of the Scientific Technical Society (Sovet NTO) of the Sumsarskiy mine (Sumsarskiy rudnik)

AVAILABLE: Library of Congress

Card 1/1

PODGORNYY, A.G.

PODGORNYY, A.G.

Conference of "Gornyi Zhurnal" readers. Gor. zhur. no.12:70 D '57.
(MIRA 11:1)

1. Predsedatel' Soveta Nauchno-tekhnicheskogo obshchestva, glavnyy geolog Sumsarskogo rudnika.
(Mining engineering)

L 2133-65 EWT(m)/EWP(k)/EWP(q)/EWP(b)/EWP(r) Pf-4 AFTC(a)/AFETR/SSD/
ACCESSION NR: AR4043465 AEDC(b)/AFWL MJW/JD S/0277/63/000/011/0027/0028

54

SOURCE: Ref. zh. Mashinostr. mat., konstr. i raschet detal. mash. Otd. vy*p., Abs. 11.48.180

AUTHOR: Podgorny*y, A. N.

TITLE: Investigation of conditions of destruction of disks operating under conditions of creep during constant temperature on the installation VRD-500

CITED SOURCE: Tr. Khar'kovsk. politekhn. in-ta, v. 46, no. 8, 1963, 156-164

TOPIC TAGS: turbine disk, turbine rotor, rupture strength, creep, aging

26 18

TRANSLATION: There is given a diagram and the operating principle of the acceleration installation VRD-500 intended for durability tests of turbine disks and rotors with diameters up to 500 mm and a weight up to 100 kg, and also results of creep tests of disks of steel EI-415 with varying load on the rim at a temperature of 540°. The conducted work showed that the installation VRD-500 answers completely the presented requirements and is useful for test of disks with diameters up to 500 mm and models of rotors during uniform and gradient heating to a temperature

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L 2133-65
ACCESSION NR: AR4043465

of 800-900° during rotation with a speed of up to 30,000 rpm. Disks made from any steel can be tested briefly for stress-rupture strength and creep. The results of experiment and calculation agree well. Calculation based on the theory of aging made it possible to exactly predict the behavior of disks during the investigation and to predetermine the time of their destruction. The experiments once again confirmed that equality between the maximum stress and the limit of stress-rupture strength of a material is a reliable and sufficiently accurate condition for the destruction of disks operating under conditions of creep.

SUB CODE: AS, PR ENCL: 00

Card 2/2

ACC NR: AR6030404 (N) SOURCE CODE: UR/0124/66/000/006/V042/V042

AUTHOR: Marchenko, G. A.; Podgornyy, A. N.

TITLE: Solution of the three-dimensional problem of creep theory for a thick-walled rotating cylinder

SOURCE: Ref. zh. Mekhanika, Abs. 6V307

REF SOURCE: Dinamika i prochnost' mashin. Resp. mezhved. nauchno-tekhn. sb., vyp. 1, 1965, 107-113

TOPIC TAGS: creep mechanism, ordinary differential equation

TRANSLATION: The problem studied is that of the creep properties of a nonuniformly heated thick-walled cylinder of finite length on the basis of equations of the theory of elasto-plastic deformation, containing the time factor (the theory of aging). The power-series law of creep is taken to hold. An approximate solution is constructed by giving the component of displacement in the form

$$u_x = u(x) + z\varphi_1(x), \quad u_z = w(x) + z\varphi_2(x) + f_1(x, z)$$

where z is the distance from the mean surface, the x-axis is parallel to the axis of the cylinder, u, w are displacements of the points of the mean surface, and ϕ_1, ϕ_2 are the unknown functions. In the interval $x_i < x \leq x_{i+1}$, function f_1 is chosen in the

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ACC NR: AR6030404

form

$$f_1 = C_i z^2 + D_i z^3,$$

where C_i and D_i are constants. On the basis of the minimum energy condition for the system, four ordinary differential equations are derived for u, w, ϕ_1, ϕ_2. Conditions on the end-coverings of the cylinder are satisfied integrally. A general scheme for computer calculations is considered. The question of the limits of applicability of the proposed scheme is not discussed. L. M. Kachanov.

SUB CODE: 12,20

Card 2/2

PODGORNYY, A. N. [Pidhornyi, A. M.] (Khar'kov)

Differential equations of the equilibrium of a thick-walled cylinder of finite length considering the creep. Prykl. mekh. 9 no.1:77-85 '63. (MIRA 16:4)

1. Khar'kovskiy politekhnicheskiy institut.

(Cylinders)

SHCHEGLOVA, M.D.; PODGORNYY, A.N.; SHCHEGLOV, S.I.

Strength and changes in the strength of grog refractories under the effect of heating up to 1500°. Izv.vys.ucheb.zav.; chern.met. 4 no.6: 164-167 '61. (MIRA 14:6)

1. Dnepropetrovskiy khimiko-tekhnologicheskiy institut.
(Refractory materials—Testing)

PODGORNIY, E.V., inzh.

Study of the nonbalance currents of differential protection systems using analog computers. Izv. vys. ucheb. zav.; energ. 8 no.11:1-6 N '65. (MIRA 18:11)

1. Novocherkasskiy politekhnicheskiy institut imeni S. Ordzhonikidze. Predstavlena kafedroy elektricheskikh stantsiy.

PODGORNOV, G. G.

Podgornov, G. G.

"The Fight against Losses of Water in the Economy." Min Higher Education USSR. Tashkent Inst of Engineers of Irrigation and Mechanization of Agriculture (TII and MSKh). Tashkent, 1955 (Dissertation for the degree of Candidate in Technical Science)

SO: Knizhnaya letopis' No. 27, 2 July 1955

PODGORNYY, G.

Repairing hydraulic hoist pumps of MAZ-205 dump trucks. Avt. transp. 36 no.11:51 N '58. (MIRA 11:11)
(Dump trucks--Maintenance and repair)

L 44783-66 EWT(1)/EWP(m)/EWT(m)/EWP(w) IJP(c) WW/EM

ACC NR: AP6025649 (A) SOURCE CODE: UR/0413/66/000/013/0100/0100

INVENTOR: Nedbaylov, A. M.; Zashchuk, I. V.; Podgornyy, G. V.; Radoshevich, S. P.

77
B

ORG: none

9M
26

TITLE: Digital automatic velocity meter for shock and sonic waves in various media. Class 42, No. 183462 [announced by the All-Union Scientific Research Institute of Roads and Highways (Vsesoyuznyy dorozhnyy nauchno-issledovatel'skiy institut)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 13, 1966, 100

TOPIC TAGS: velocity measuring instrument, shock wave velocity, ultrasonic velocity

ABSTRACT: This Author Certificate introduces a digital automatic meter for measuring the velocity of shock and sonic waves in various media, such as concrete (see Fig. 1). It consists of a high-frequency generator, a two-channel input device consisting of two piezo-transducers and two identical amplifiers, a delay line, a counter, and an indicator. To increase measurement accuracy and facilitate the taking of readings, to the output of the input devices' amplifiers, which

Card 1/2 UDC: 620.179.16

L 44795-66

ACC NR: AP6025649

0

generate signals with identical amplitudes and forward edges, is connected a unit for compensating the shock-wave-passage difference between the two piezoelectric transducers with digital count, an impulse-excited digital-impulse generator, a two-channel unit with a counting-trend indicator, and a two-way conversion device with a numerical display. Orig. art. has: 1 figure.

[SA]

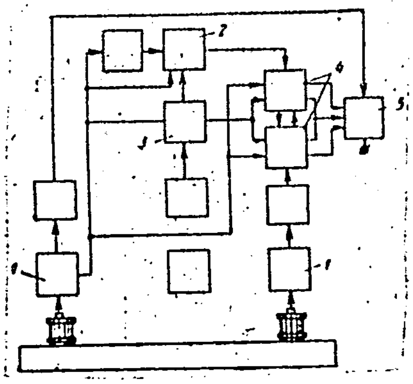

Fig. 1. Digital automatic velocity meter

1 - Input device; 2 - compensation unit;
3 - generator; 4 - two-channel unit; 5 - transducer device.

SUB CODE: 09, 20/ SUBM DATE: 27Jul64

Card 2/2

PODGORNYY, I., inzh.; ZAPRUTSKIY, B., inzh.; ITKIS, B., inzh.

SL-1 self-unloading timber truck. Avt. transp. 41 no.5:42-44 My '63.
(MIRA 16:10)

(Motortrucks)

MALEV, I.; PODGORNYY, I. [Podhornyi, I.]

"Geological clock" narrates. Znan. ta pratsia no.7:10-11 Jl '62.
(MIRA 15:7)

(Geological time)

PODGORNYY, I.

Looking into the depths of the universe. IUn.tekh. 6 no.11:17-19 N '61. (MIRA 14:11)

(Telescope)

PODGORNYY, I.

Instrument capable of discerning colors. IUn.tekh. 4 no.7:
33-35 Jl '60.
(MIRA 13:9)
(Spectrophotometer)

S/096/63/000/005/007/011
E194/E455

AUTHOR: Podgornyy, I.G., Candidate of Technical Sciences

TITLE: The sorption-energy mechanism of alkali brittle fracture of stressed boiler-turbine steels

PERIODICAL: Teploenergetika, no.5, 1963, 71-75

TEXT: Alkali embrittlement of boiler-turbine steel is associated with the presence of hydrogen in the steel. The investigation here described is concerned with the influence of physical-chemical sorption processes on brittle fracture of stressed steel, which there is a tendency to ignore. The tests were made in a standard alkaline corrosive solution both with and without polarization from an external d.c. source. The electrode potentials of the specimens were continuously measured from the moment of immersion in the solution to failure. In the presence of a passivating substance such as sodium nitrite in the alkaline corrosive medium, an increase in load is accompanied by a steady displacement of the potential of stressed specimens in a negative direction relative to the specimens without stress. If no passivator is present, the specimen potential is displaced in a

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positive direction at stresses above the yield point. Various explanations have been offered for this effect. Here the changes in potential specimens are related to changes in the hydrogen content of the failed specimens. In passivated alkali medium, at any stress, and in corrosive alkaline medium at stresses below the yield point the steel absorbs very little hydrogen and the hydrogen pressure in the surface adsorbed layer increases, so displacing the potential in a negative direction. At and above the yield point the hydrogen dissolves in the steel and the potential moves in a positive direction. The figures quoted for hydrogen content are in fact an underestimate because of hydrogen losses between the instant of failure and the earliest possible instant of measurement. Hydrogen is present in steel in two forms, passive in the micropores and active in the true dissolved condition in the form of protons. Most investigators consider that the active hydrogen is the cause of hydrogen embrittlement. The results obtained indicate that in boiler-turbine steels which are exposed in this way to stress and an alkali corrosive medium the formation and propagation of cracks arises from the reduction of the internal free surface energy which causes weakening of the metal. The hydrogen is adsorbed in the most strained zones, particularly in the presence of complex stressing, which can give rise to considerable local strain with maximum dislocation and vacancies in the metal. When the metal adsorbs hydrogen there is a considerable reduction in the internal free surface energy and consequently in the surface strength. On this basis the displacement of specimen potential in a positive direction is attributed to loss of free energy on the intermediate surfaces of separation of metal and not to an increase of potential or internal energies. Electron microscope studies showed that the formation of microporosity and cracks occurs preferentially in regions of pearlitic grains. It will be recalled that free energy and consequently the surface strength of the pearlitic phase is less than that of the ferritic. It is considered that with certain external electrical-chemical conditions and with stresses in the steel above the yield point, an alkaline corrosive medium has the same consequences in the metal as the action of high temperature, namely it intensifies diffusion processes along the grain boundaries and reduces the surface strength. Inter-

S/096/63/000/005/007/011
The sorption energy mechanism ... E194/E455

crystalline failure of metal under stress can occur under both oxidizing and reducing conditions and is accompanied by considerable adsorption weakening of the steel. Existing procedures for investigating this type of failure from the purely corrosion standpoint are not exhaustive. In addition to measuring the potential of specimens and the pH value of solution causing failure, it would be advisable to accumulate data on the hydrogen content of the failed specimens. There are 6 figures.

ASSOCIATION: Leningradskiy tekhnologicheskiy institut
(Leningrad Technological Institute)

Card 4/4

PODGORNYY, I.G.

Hydrogen adsorption sofetning of steel 20 under stress. Izv. vys. ucheb. zav.; chern. met. 6 no.3:148-152 '63. (MIRA 16:5)

1. Leningradskiy tekhnologicheskiy institut im. Lensoveta.
(Steel—Hydrogen content) (Strains and stresses)

28298 S/081/60/000/010/006/009
A166/A129

18.8310

AUTHOR: Podgornyy, I.G.

TITLE: The mechanism of damage to 34XH3M (34KhN3M) steel in an alkaline medium

PERIODICAL: Referativnyy zhurnal. Khimiya, 1960, no. 10, 279 - 280, abstract 39050. (Tr. Leningr. tekhnol. in-ta im Lensoveta, 1959, no. 50, 246 - 259)

TEXT: On the basis of experimental data and an analysis of existing research the author concludes that the action of hydrogen is not limited to the mere mechanical pressure of molecular hydrogen inside 34KhN3M steel (expansion); there also occurs some plastification of the metal due to the surfactant properties of the boiler medium with subsequent hydrogen aging of the metal. Damage to the disks of steam turbines due to the action of the boiler medium is an example of so-called delayed destruction. If we accept that brittle defects are caused by hydrogen diffusing into the metal, then some well-known and well-tried measures for countering this type of damage may be recommended; the addition of boron, titanium, niobium and other alloying elements to the steel. Further re-

X

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28298

S/081/60/000/010/006/009
A166/A129

The mechanism of damage to 34 KhN3M steel in,...

search is needed to find means of protecting the rotors of steam turbines which are already in use against brittle damage in cases where the medium is especially aggressive. Bibliography: 29 titles.

Author's summary

[Abstracter's note: Complete translation]

Card 2/2

PODGORNYY, I. G.

Inexhaustible force. Okhr. truda i sots. strakh. 4 no.8:14-15
Ag '61. (MIRA 14:11)

1. Ispolnyayushchiy obyazannosti nachal'nika Latviyskogo respublikanskogo kurortnogo upravleniya profsoyuzov.
(Latvia—Health resorts, Watering places, etc.)

PODGORNYY, I. G., Doc Tech Sci -- (diss) "Mechanism of the action of the boiler environment on intercrystalline disintegration of boiler-turbine steels under stress." Leningrad, 1960. 47 pp with graphs; (Ministry of Higher and Secondary Specialist Education RSFSR, Leningrad Order of Labor Red Banner Technological Inst im Lensovet); 200 copies; price not given; bibliography on pp 46-47 (52 entries); (KL, 23-60, 123)

PODGORNYY, I. G.: Doc Tech Sci (diss) -- "The mechanism of action of the boiler medium on intercrystalline disturbances of boiler-turbine steels under stress". Leningrad, 1958. 47 pp (Min Higher Educ USSR, Leningrad Order of Labor Red Banner Tech Inst im Leningrad Soviet), 150 copies (KL, No 10, 1959, 125)

PODGORNYY, I. G.

2656. ALKALINE BRITTLENESS OF BOILER STEEL. Podgornyi, I.G. (Moscow: Oborongiz, 1955. "Corrosion of Metals and Methods of Combating It (Korroziya Metallov i Metody Bor'by s Nei)", 87-114; abstr. in Ref. Zh. Khim. (Ref. J. Chem., Moscow), [illegible]). Statistical treatment [illegible] shows that the curve [illegible] failure from alkaline brittleness as a function of the ratio of concentrations of sodium silicate and sodium hydroxide has a bend in it which is characteristic of electrocapillary and adsorption phenomena, although the convex side points downwards. Examination in special [illegible] the effect of polarization from [illegible] source of current on steel [illegible] medium with voltage uniformly distributed showed that [illegible] caustic brittleness occurs most often when there is [illegible] polarization [illegible] a current [illegible] 0.3 mA/sq.cm [illegible] time under these conditions. Shifting the potentials [illegible] in the negative direction creates favourable conditions for the [illegible] hydrogen, mainly at the grain boundaries of boiler steel. Determinations of the hydrogen content of steel immediately after failure from alkaline brittleness showed that the higher the hydrogen content of samples the shorter was the time before failure. Failure is determined not only by mechanical stress and polarization, but also by the character of the stressed state. A linear relationship in double logarithmic coordinates is established between mechanical stress and the time before failure. This shows that durable strength of steel in an alkaline medium is dependent not on corrosion processes but on physical and chemical processes that facilitate the transition of the steel into a brittle state. Addition of sodium nitrate to an alkaline solution shifts the oxidizing-reducing potential of the solution in the positive direction, which eliminates processes connected with the formation of hydrogen and inhibits the formation of caustic brittleness. The protective action of sodium nitrate was at its best when the nitrate was 35% of the caustic soda content. When a passivator is present a protective film [illegible] which [illegible] the metal from the action of hydrogen. It is concluded that failures from caustic brittleness result from the reaction of boiler steel in [illegible] state, possessing sufficient potential energy, with a concentration of boiler water that does not cause the formation on the steel surface of stable natural protective coatings [illegible]

PODGORNYY, I.G.

124-11-13526

Translation from: Referativnyy Zhurnal, Mekhanika, 1957, Nr 11, p. 167 (USSR)

AUTHOR: Podgornyy, I. G.

TITLE: On the Alkaline Brittleness of Boiler-Plate Steel
(O shchelochnoy khrupkosti kotel'noy stali)

PERIODICAL: V sb.: Korroziya metallov i metody bor'by s neyu. Moscow, Oborngiz, 1955, pp 87-114

ABSTRACT: Bibliographic entry.

Card 1/1

SOV/137-58-11-23046

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 11, p 173 (USSR)

AUTHOR: Podgornyy, I. G.

TITLE: Investigation of Alkaline Brittleness of Boiler Steel (Issledovaniye shchelochnoy khrupkosti kotel'noy stali)

PERIODICAL: V sb.: Vnutrikotlovyye fiz.-khim. protsessy, vodopodgotovka i vodn. rezhimy kotlov na elektrost. vysokikh i sverkhvysokikh parametrov. Moscow, AN SSSR, 1957, pp 366-383

ABSTRACT: A description is given of the design of an apparatus, the technique, and the results of the investigation of the effect of various factors on the breakdown of low-carbon steel due to alkaline brittleness. The apparatus consists of three autoclaves with an internal diam of 70 mm and a height of 170 mm. The tubular specimens are pressed by means of a sealing surface to the lower portion of the autoclave by a set of connector nuts. Stresses are created by means of a rod loaded by a system of levers. The specimens were prepared from 10-, 15-, 20-, and St3-grade steels. A solution containing 200 g NaOH, 0.56 g $Na_2 \cdot SiO_3$, and 200 mg NaCl per kg of water served as the aggressive medium. Anodic polarization with a D = 0.3 ma/cm^2 prevents brittle

Card 1/2

Investigation of Alkaline Brittleness of Boiler Steel SOV/137-58-11-23046

alkaline decomposition. An investigation of the effect of H content on the resistance of steel to alkaline brittleness showed that under steady stress the decomposition occurs earlier as the amount of H in the steel increases. In the absence of polarization from an external source of current a linear relationship exists between the logarithm of the length of time elapsing up to failure and the inverse value of the absolute temperature. Among the steels investigated St 10 is the most susceptible to brittle failure. Annealing increases the tendency of steel towards alkaline failure. The addition of $NaNO_3$ to the alkaline solution has a protective effect on steel.

M. Sh.

Card 2/2

PODGORNYY, I.G.

Mechanism of the intercrystalline rupture of EI 257 steel under stress conditions in a condensate. Trudy LTI no.50:227-245 '59.
(MIRA 14:3)

(Steel—Corrosion)

PODGORNYY, I.G.

Mechanism of the breakdown of 34KhN2M steel in an alkaline medium. Trudy LTI no.50:246-259 '59. (MIRA 14:3)

(Steel--Corrosion)

PODGORNYY, I. M.

A. M. Markus, L. I. Pivovar, I. M. Podgornyi. Indicator for molecular clusters. P. 155

April 10, 1950

SO: Journal of Technical Physics, 21, No. 2 (Feb. 1951) pp 155-9.

PODGORNYY, I.M.

6

Determination of the [illegible]
loss [illegible]
[illegible]
I. M. Podgornyi [illegible]
403-5 1955 [illegible] preceding abstract [illegible] The effective cross
section of electron loss was det[illegible]
[illegible] target [illegible]
[illegible]
values of the cross sections [illegible] with increasing energy

Phys. Tech. Inst, AS UkrSSR

Consultation with [redacted] reveals that the original in Russian states ~~Podgornyy was pu~~ that the inst. publishing this is the Phys-Tech. Inst. of the AS, Ukrainian SSR

PoDgoRNYY, I.M.

C-5

Category : USSR/Nuclear Physics - Nuclear Reactions

Abs Jour : Ref Zhur - Fizika, No 3, 1957, No 6075

Author : Artsimovich, L.A., Andrianov, A.M., Dobrokhotov, Ye.I., Luk'yenov, S.Yu., [redacted] Sinitsyn, V.I., Filippov, N.V.

Title : Hard Radiation from Pulse Discharges.

Orig Pub : Atom. energyia, 1956, No 3, 84-87

Abstract : It was observed that high-power pulse discharges in light gases can be sources of hard radiation. In 1952 the authors detected neutron radiation accompanying pulse discharges in D_2. The discharges were carried out in cylindrical tubes 20 -- 40 cm in diameter, 50 -- 100 cm long. The current reached several hundreds of kiloamperes, and its rate of rise amounted to 5×10^{10} -- 1.5×10^{11} amp/sec. Silver targets were placed in paraffin blocks and scintillation counters were used to count the neutrons. In discharge tubes with porcelain walls, neutron emission is observed if the initial pressure of D_2 ranges from 0.01 to 0.3 mm Hg, while in tubes with metal sidewalls the emission is observed up to 10 mm. At a maximum

Card : 1/2

Podgornyy, I.M.

USSR/Electrochemistry B-12

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 26338

Author : S.Yu. Luk'yanov, I.M. Podgornyy
Title : Hard X-Ray Radiation Accompanying Discharge in Gas.

Orig Pub : Atom energiya, 1956, No 3, 97-106

Abstract : It is shown that a powerful electric discharge in various gases under low pressure is accompanied by a radiation of hard x-ray quanta with the energy of 350 to 800 kev. The radiation originates at the electrode with the positive potential, as well as in the middle part of the discharge chamber. The authors prove that this radiation is a retarding x-ray radiation of electrons accelerated in electric fields originating near the axis of the discharge tube at the discharge.

Card : 1/1

PODGORNYY, I.M.

432

PENETRATING RADIATION FROM PULSE DISCHARGE

Pz-6/Po-4/Pab-10/Pi-4

L 32025-65 EWT(1)/EPA(sp)-2/EPA(w)-2/EEC(t)/T/EWA(m)-2
IJP(c) AT S/0053/65/085/001/0065/0086

ACCESSION NR: AP5004259

AUTHOR: Podgornyy, I. M.

TITLE: Confinement of high-concentration plasma in adiabatic traps

56

B

SOURCE: Uspekhi fizicheskikh nauk, v. 85, no. 1, 1965, 65-86

TOPIC TAGS: high concentration plasma, plasma confinement, high concentration plasma confinement, adiabatic trap, plasma adiabatic trap, plasma turbulent heating, plasma lifetime

ABSTRACT: Recent achievements in the heating and confinement of high-concentration plasma (density n $\geq 10^{11}$ cm^{-3}) in adiabatic traps are reviewed. Primary attention is given to works on the stability of confinement. The review is based on 25 Soviet and 12 non-Soviet references. Works of American researchers and of the Soviet physicists Artsimovich and Zavoyskiy are described, and experiments performed in the radiation laboratory of the Institute of Atomic Energy and those performed on the "Orekh" and "PR-5" installations are discussed. Experiments performed in the Plasma Investigation Department of the Institute of Atomic Energy with a plasma concentration of 10^7 to 10^9 cm^{-3} show that with a 2×10^{-6} mm Hg vacuum in a simple adiabatic trap the lifetime of the plasma is 100 usec at a 5 koe intensity of the

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ACCESSION NR: AP5004259

magnetic field. The trap was filled with plasma of 10^{10} cm^{-3} maximum concentration using an ion magnetron. It is shown that plasma lifetime increases monotonically with

$$\alpha = \frac{\sqrt{H_0^2 + H_r^2}}{H_0},$$

where H_0 is the intensity of the main field on the axis, and H_r is the field of rods in the lateral magnetic mirror. The experiments performed with the PR-5 installation showed a maximum lifetime of 10—15 msec. In these experiments the lifetime was limited by the charge exchange. Ye. K. Zavoyskiy investigated turbulent plasma heating, which is based on the collective friction of the electron flow through plasma. Collective friction occurs when the velocity of the ordered motion of the electron beam exceeds the average thermal energy of the plasma electrons. The investigation was conducted at concentrations of 2×10^{11} to 4×10^{13} cm^{-3}. The product of the plasma concentration on electron temperature remained unchanged in a wide range of initial concentrations ($nkT \approx 10^{15}$ ev/cm^3 when n varied from 2×10^{11} to 4×10^{13} cm^{-3}). The maximum value for average ion energy obtained from turbulent heating was 150—200 ev. Maximum temperature of the electrons was 5000 ev. At T_e = 500 ev and n = 10^{12} cm^{-3}, the experimentally determined lifetime was 60 μsec. The time of confinement of fast ions at T_e = 200 ev, T_i = 150 ev, and

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ACCESSION NR: AP5004259

$n = 10^{12}$ cm^{-3} was 130 μsec. Great technical difficulties associated with the generation of large amplitudes of the high-frequency magnetic field are encountered when attempts are made to use turbulent heating to obtain thermonuclear temperatures. [JA]
Orig. art. has: 11 figures and 14 formulas.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: ME

NO REF SOV: 025

OTHER: 012

ATD PRESS: 3200

Card 3/3

PODGORNYY, I.M.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1368
AUTHOR PODGORNYJ, I.M.
TITLE On the X-Ray Radiation on the Occasion of the Initiation of a Gas Discharge.
PERIODICAL Dokl.Akad.Nauk, fasc. 5, 820-822 (1956)
Issued: 8 / 1956 reviewed: 10 / 1956

The start X-ray radiation occurring on the occasion of the discharge of condenser batteries by hydrogen at low pressure was investigated. The hydrogen was in a ceramic chamber of 1000 mm height and 170 mm diameter. Immediately behind the holes which were covered with aluminium foil and served as an outlet for the radiation from the tube a luminescent crystal was fixed. The quanta produced on the electrode and on the walls of the chamber impinged upon one of the crystals behind the hole in the electrode. Onto a second crystal behind the other hole in the wall of the farfor tube there impinged only the quanta produced by scattered electrons inciding upon a small portion of the wall opposite the hole. After amplification the impulses were conveyed to the input of a two-beam impulse oscillograph. According to an attached diagram the start distinctly takes place later than the connecting of the voltage to the electrodes. At initial pressures of the hydrogen of from 10^{-2} to 10^{-1} torr delay amounts to some microseconds, after which the voltage between the electrodes diminishes considerably. The impulse of X-ray radiation occurs at the moment of the voltage drop at the electrodes. The duration of X-ray impulses and of the steep voltage drop at the

PODGORNYY, I.M.

USSR/Nuclear Physics - Nuclear Reactions. C-5

Abs Jour : Ref Zhur - Fizika, No 4, 1957, 8838

Author : Osovets, S.M.m Podgornyy, I.M.
Inst :
Title : High Power Pulse Discharges in Gases. (Session of the Division of Physical-Mathematical Sciences.)

Orig Pub : Vestn. AN SSSR, 1956, 26 No 8, 106-108

Abstract : The article contains a brief summary of a series of papers, read at the session of the physical-mathematical science division of the Academy of Sciences, USSR, on 12 June 1956, devoted to the results of the investigation of high-power pulsed discharges in gases. The works were carried out in connection with a search for a means of producing controllable thermonuclear reactions (see Referat Zhur Fizika, 1956, 6072 -- 6077).

Card 1/1

PODGORNYY, I.M.

3

X-ray emission at the start of a gas discharge. I. M. Podgornyi. *Doklady Akad. Nauk S.S.S.R.* 108, 820-? (1956).—The start of x-ray radiation during a discharge of a condenser battery through H at low pressures was studied. An increase in the [illegible] decrease in the radiation intensity.

[illegible] Leach

1

PODGORNY, I. M., CHUVATIN, S. A., BYKOV, G. A. and PIS'MENNY, V. D.

"Investigation of the Process of Electrodynamic Acceleration of Clumps of Plasma." (II). (Work carried out in 1957); Part I was published previously (~~XXX~~ L. A. Artsimovich, S. ~~N~~ Yu. Luk'yanov, I. N. Podgorny, S. A. Chuvatin, Journal of Experimental & Theoretical Physics, 33, 3, 1957; pp. 222-234.

"The Physics of Plasmas; Problems of Controlled Thermonuclear Reactions." VOl. IV. 1958, published by Inst. Atomic Energy, Acad. Sci. USSR. resp. ed. M. A. Leontovich, editorial work V. I. Kogan.

Available in Library.

PODGORNYY, I. M.

56-7-1/66

AUTHOR ARTSIMOVICH, L.A., LUKYANOV, S.Yu, PODGORNYY, I.M., CHUVATIN, S.A.

TITLE Electrodynamical Acceleration of Plasma Bundles.
(Elektrodinamicheskoe uskorenie sgustkov plazmy - Russian)

PERIODICAL Zhurnal Eksperim. i Teoret.Fiziki, 1957, Vol 33, Nr 7, pp 3-8 (U.S.S.R.)

ABSTRACT

In a vacuum chamber two rail electrodes, which are not connected and are parallel to each other, are fitted; they are earthed over a condenser (75 μF) and a sphere gap. If, between these two electrodes, a thin copper wire is smelted explosionlike, the plasma bundle produced will move with a certain velocity. This velocity is measured by means of a rapid-action camera (2.10^6 picture per second, time of exposure 0,2 μS) or by means of 2 magnetic inductors.
If a copper wire of 0,02 mm thickness is burned with 30 KV, the plasma bundle has a velocity of $(1-2).10^7$ cm/sec at a distance of 30 cm from the place of the explosion.
Thus it was possible to show that a plasma bundle can be electrodynamically accelerated.
(8 Slavic references)

ASSOCIATION Institute for Atomic Energy (Institut atomnoy energii)
PRESENTED BY
SUBMITTED 19.6.1957
AVAILABLE Library of Congress.
Card 1/1

20-117-5-18/54

AUTHORS: Podgornyy, I. M., Chuvatin, S. A.

TITLE: X-Ray Emission Caused by a High-Power Pulse Discharge in Xenon (Rentgenovskoye izlucheniye pri moshchnom impul'snom razryade v ksenone).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 5, pp. 795-797 (USSR)

ABSTRACT: The present paper furnishes some results of the investigation of X-ray emission of a gas discharge, which is not connected with the start. These results were obtained from the radiation of a discharge in xenon as well as in hydrogen-xenon mixtures. The discharge was made to pass in a farfor-(China)-chamber with a diameter of 175 mm and a height of 1000 mm. The discharge circuit consisted of a condenser battery with a capacity of 36μF. The experiments were conducted at different initial gas pressure varying from 5.10^{-3} to 5.10^{-1} mm torr. The oscillograms of the pulses of X-ray radiation, of the discharge current and of the voltage were taken down with a two-ray pulse spectrograph of the type OK - 17. The X-ray radiation was recorded by X-ray films and with a scintillation counter. The oscillograms of the voltage at the electrodes of the discharge chamber show, that the discharges in hydrogen and in xenon take a different course. The oscillographs of the X-ray pulses are illustrated by figures attached to the paper and speak in favour of an identical duration of the X-

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20-117-5-18/54

X-Ray Emission Caused by a High-power Pulse Discharge in Xenon.

ray pulses in the case of the discharge in hydrogen and in xenon, repsectively.The duration of the pulses in both cases amounts to about 1 μsec.The pulse of the start X-ray radiation is missing in the oscillographs of the X-ray pulses.There exist also essential differences in the dependence of the intensity of the X-ray emission on the pressure in the case of hydrogen and xenon,respectively.Therefore,the intensity of the X-ray emission is not determined by the number of atoms contained in the discharge chamber. On the basis of the theory of the compression of the discharge caused by inertia it may be assumed, that the overall mass of the gas contained in the discharge chamber represents one of the basic parameters determining the course taken by the various processes in a powerful discharge of short duration.Experiments were conducted to verify this assumption,which permitted to study the intensity of the X-ray emission from a discharge in mixtures of hydrogen and of xenon.An addition of small amounts of xenon to the hydrogen shows no marked influence on the intensity of the soft X-ray emission,if the experiments were conducted at a pressure of $6 \cdot 10^{-2}$ mm mercury.If the pressure is below this value,the amplitude of the X-ray pulse increases with an increasing proportion of xenon.There are 3 figures,and 2 Slavic references.

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PODGORNYY, I. M.

ANDRIANOV, A. M., BAZILEVSKAYA, O. A., LUK'YANOV, S. Yu., OSOVETS, S. M., PETROV, Yu. F.
PODGORNY, I. M. and YAVLINSKIY, N. A.

"Investigation of the Heating of Hydrogen Plasma in M Small Toroidal Systems," (Work carried out in 1951); pp. 42-65.

The physics of Plasmas; Problems of Controlled Thermonuclear Reactions." Vol. I. 1958, published by Inst. Atomic Energy, Acad. Sci. USSR. resp. ed. M. A. Leontovich, editorial work by V. I. Kogan.

Available in Library.

PODGORNY, I.M.

ANDRIANOV, A. M., BAZILEVSKAYA, O. A., BRAGINSKIY, S. I., BREZHNEV, B. G., PODGORNY, I. M., PROKHOROV, Y. G., FILIPPOV, N. V., FILIPPOVA, T. I. and KHRABROV, V. A.

"Experimental Investigation of High Current Pulse Discharges."

paper to be presented at 2nd UN Intl. Conf. on the peaceful uses of Atomic Energy, Geneva, 1 - 13 Sept 58.

21(7) SOV/56-35-4-16/52

AUTHORS: Koval'skiy, N. G., Podgornyy, I. M., Khvashchevskiy, S.

TITLE: The Energy of X-Ray Radiation Emitted by a Strong Pulsed Discharge in Hydrogen (Energiya rentgenovskogo izlucheniya, ispuskayemogo moshchnym impul'snym razryadom v vodorode)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 4, pp 940 - 946 (USSR)

ABSTRACT: Already in 1953, after the discovery of hard X-ray radiation accompanying an extensive discharge in hydrogen or deuterium, tests were carried out for the purpose of estimating the limits of this energy spectrum. For this purpose the filtering method, the method of measuring the length of recoil electron tracks in thick nuclear emulsions, the method of the shielded recorder, and the method of the nuclear photoeffect (reaction (γ,n) on Be) were employed. In the present paper the authors employed the method of the track length of recoil electrons in a cloud

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chamber. For the purpose of determining the energy of X-ray quanta according to electron energy it is necessary to know whether the electrons originate from a photo- or a Compton effect. Conditions are illustrated by figure 1 in form of a diagram. Within the range of 200 - 400 keV the photoeffect in air may be neglected as against the Compton effect, but this is not the case with the formation of photoelectrons on the glass walls of the chamber. For the production of the pulsed discharge a battery consisting of 12 condensers of the type **IM**-3/50 (36 μF) was used; the discharge took place in a porcelain tube of 1 m length and 17 cm diameter; hydrogen pressure in the tube amounted to 6.10^{-2} torr. With a voltage of 40 kV (200 **k**A) on the condenser battery, this pressure permitted maximum discharge amperage. Figure 2 shows a block scheme of the test device which is described with all details. Measuring results are shown by 3 diagrams (Figs 4-6): Figure 4 shows the energy distribution

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The Energy of X-Ray Radiation Emitted by a Strong Pulsed SOV/56-35-4-16/52
Discharge in Hydrogen

of the recoil electrons which were formed under the
influence of X-ray radiation; figure 5 shows the
energy distribution of the electrons formed by X-ray
radiation in the tube for U_{max} = 240 kV, figure 6
shows the same for U_{max}=285 kV. The following
summary of investigation results is given : 1) The times
of the formation of neutron- and X-ray-radiation
in the discharge process coincide. 2) The deuterons
responsible for the occurrence of neutrons in deuterium
discharges are accelerated in the direction of the
cathode; the intensity maximum of X-ray and neutron
radiation is in the zone near the anode. 3) X-ray- and
neutron radiation is observed in one and the same
zone of the primary gas pressure in the discharge
tube. 4) By estimation of the maximum deuteron energy
a value of 250 keV is obtained; this value is in good
qualitative agreement (within the limits of
measuring errors) with the energy limit of the X-ray
spectrum (320 kV). The authors thank L.A.Artsimovich

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and S.Yu. Luk'yanov for valuable discussions, and T.L.Asatiani for his help in preparing the cloud chamber. There are 6 figures and 8 references, 4 of which are Soviet.

SUBMITTED: May 27, 1958

9(3) SOV/20-123-5-15/50

AUTHORS: Podgornyy, I. M., Koval'skiy, N. G., Pal'chikov, V. Ye.

TITLE: High Power Pulse Discharge Electrons Generating Hard X-Radiation (Elektrony vyzyvayushchiye zhestkoye rentgenovskoye izlucheniye moshchnykh impul'snykh razryadov)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 5, pp 825-827 (USSR)

ABSTRACT: The present paper reports on the energy of electrons generating hard x-radiation. The discharge was produced in a porcelain chamber of 175 mm diameter and 1000 mm height. The discharge battery consisted of a condenser battery of 36 µF capacity. The experiments were carried out in hydrogen at an initial pressure of 6.10^{-2} torr which corresponds to the maximum yield of hard X-ray quanta. The presence of X-ray pulses was controlled by a scintillation recording system with pulse oscillograph. This apparatus is described in short. In order to find the dispersion curve of the spectrograph, the electron trajectories had to be constructed graphically. It is not difficult to find the maximum value of the energy which had to be acquired by the electrons when moving along the discharge axis. The experimental data available proved

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that the maximum energy of the electrons amounts to 300 kev. A beam of 100 kev electrons was used for the control of the calculated electron trajectories. Thus, the following facts were proved by direct experiments: The electrons which cause the hard X-radiation in a powerful pulse discharge in hydrogen are accelerated along the axis of the discharge chamber. The recorded maximum energy of the electrons amounted to 300±20 kev which agrees well with the results obtained by measurements of the maximum energy of the X-ray spectrum. There are 1 figure and 4 Soviet references.

PRESENTED: July 31, 1958, by L. A. Artsimovich, Academician

SUBMITTED: July 25, 1958

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PHASE I BOOK EXPLOITATION SOV/2081

International Conference on the Peaceful Uses of Atomic Energy, 2d., Geneva, 1958

Doklady sovetskikh uchenykh; yadernaya fizika (Reports of Soviet Scientists; Nuclear Physics) Moscow, Atomizdat, 1959. 552 p. (Series: Its: Trudy, Vol. 1) 8,000 copies printed.

Eds. (Title page): A.I. Alikhanov, Academician; V.I. Veksler, Academician; and N.A. Vlasov, Candidate of Physical and Mathematical Sciences; Ed. of this volume: S.I. Brodov and B.P. Zaretskiy, Candidates of Physical and Mathematical Sciences; Ed. (Inside book): G.L. Smolyan; Tech. Ed.: Ye.I. Mazel'.

PURPOSE: This collection of articles is intended for scientific research workers and other persons interested in nuclear physics. The volume contains 43 papers presented by Soviet Scientists at the Second Conference on Peaceful Uses of Atomic Energy, held in Geneva in September 1958.

COVERAGE: It is divided into two parts. Part I contains 17 papers dealing with plasma physics and controlled thermonuclear Reactions, and Part II contains 26 papers on nuclear physics, including problems of particle acceleration and of cosmic ray physics. The first paper by L.A. Artsimovich presents a review of Soviet work on controlled thermonuclear reactions. The remaining papers in Part I deal with particular problems in this field. Papers in Part II deal in detail with various problems in nuclear physics, such as the fission of heavy atoms and their isotopes, and with the study of cosmic radiation by means of artificial earth satellites and rockets, described in a paper by S.N. Vernov. The Russian-language edition of the proceedings of the conference is published in 16 volumes. The first 6 volumes contain all the papers presented by Soviet scientists as follows: Volume (1), Yadernaya fizika (Nuclear Physics); Volume (2), Yadernyye reaktory i yadernaya energetika (Nuclear Reactor and Nuclear Power); Volume (3), Yadernoye goryucheye metally (Nuclear Fuel and Reactor Metals), Volume(4), Khimiya radioelementov i radiatsionnykh prevrashcheniy (Chemistry of Radioelements and of Radiation Transformations); Volume 5, Radiobiologiya i radiatsionnaya meditsina (Radiobiology and Radiation Medicine); Volume (6) Polucheniye i primeneniye izotopov (Production and Use of Isotopes). The other 10 volumes contain selected papers presented at the Conference by non-Soviet scientists. In the present volume discrepancies between the English and Russian language; edition of the proceedings have been noted in three articles where the texts are not identical; viz; Andrianov, et al, "High Current Pulsed Discharge"; Akhiyezer, et al, "High Frequency Plasma Oscillation"; and Bogolyubov, "Investigations of the Many-body Problem". The serial numbers of reports 2302 and 2504 are reversed in the English edition. Report 2211, by Sinelnikov, et al, is numbered 2536 in the English edition.

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Personalities mentioned include G.N. Aretov, D.S. Parfenov, G.D. Minchenkov, M.A. Leontovich, I.M. Gel'fand and R.P. Fedorenko.

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SOV/109-4-8-22/35

AUTHORS: Granovskiy, V.L., Luk'yanov, S.Yu., Spivak, G.V. and Sirotenko, I.G.

TITLE: Report on the Second All-Union Conference on Gas Electronics

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 8, pp 1339 - 1358 (USSR)

I.M. Podgornyy and N.G. Koval'skiy - "New Data on X-ray Radiation During Pulse Discharges"

V.A. Khrabrov and M.M. Sulkovskaya dealt with the investigation of the neutron radiation in powerful gas discharges in chambers with conducting walls.

M.A. Borzunov et al. - "Investigation of the Gas Discharge in a Conical Chamber".

S.M. Osovets et al. - "A Turn of Plasma in Transverse Magnetic Field".

I.G. Kesayev "Data on the Division of a Cathode Spot on Mercury in a Low-pressure Arc" (see p 1289 of the journal).

A.E. Robson (England) - "A New Theory of the Cathode Spot" (see p 1295 of the journal).

L.N. Breusova - "Positive Column in a Hydrogen Discharge With Stationary and Pulse Loads".

I.G. Nekrashevich and A.A. Labud - "Current Distribution on the Surface of Electrodes in Electric Pulse Discharges".

L.S. Ryg - "Some Properties of Gas Discharges in Low-voltage in Halogen Counters".

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G.I. Glotova and V.L. Granovskiy - "Comparison of the Initial De-ionisation in the Isotopes of Hydrogen (H and D)".

L.A. Akol'zina communicated some results on the pre-breakdown current pulses at low pressures.

M.Ya. Vasil'yeva and A.A. Zaytsev - "Charge-density oscillation Waves in Cylindrical Plasma".

L. Pekárek of Czechoslovakia communicated some information on the wave-like phenomena in gas-discharge plasma.

B.G. Brezhnev dealt with the problem of the determination of the energy of fast ions in pulse discharges.

B.B. Kadomtsev - "Convection Instability of a Plasma String".

S.I. Braginskiy and V.D. Shafranov - "Theory of a High-temperature Plasma String".

The fifth section was presided over by N.A. Kaptsov and dealt with high-frequency currents in gases. The following papers were read:

V.Ye. Golant - "Formation of Ultra-high Frequency Pulse Discharges in Inert Gases".

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G.I. Patoyuk - "Influence of the Boundary Conditions on the Formation and Maintenance of High-frequency Discharges".

P.S. Bulkin et al. - "Investigation of a Self-maintained Ultra-high Frequency Pulse Discharge and the Process of its Development".

G.N. Zastenker and G.S. Solntsev - "Some Results of the Investigation of the Formation of Low-pressure High-frequency Discharges".

G. Margenau (USA) - "Conductivity of Weakly Ionised Plasma".

A.A. Kuzovnikov - "The Conditions of Transition From High-frequency Corona Discharge at Atmospheric Pressures".

V.Ye. Golant - "The relationship Between the Characteristics of the Ultra-high Frequency Current and the Direct Current in Gas Discharges".

B.B. Lagov'yer analysed the conductivity of the disintegrating plasma in the window of a resonance discharge tube.

S.M. Levitskiy and I.P. Shashurin dealt with the applicability of the probe method to high-frequency

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discharges (see p 1238 of the journal).

The paper by V. Ye. Mitsuk et al. was devoted to the investigation of the ultra-high frequency plasma by means of the Stark effect.

G.S. Solntsev et al. dealt with the problem of electric fields in a high-frequency discharge at low pressures.

Ye. Badareu of Rumania read a paper entitled "High-frequency Discharges in Methane".

The work of the sixth section was devoted to the problems of plasma and its radiation; the section was presided over by V.A. Fabrikant. The following papers were read:

Yu.M. Kagan - "New techniques in the Probe Methods of Plasma Investigation".

V.I. Drozdov - "Oscillographic Measurements in Plasma".

V.A. Simonov and A.G. [illegible] - "Investigation of the Movement of Plasma by [illegible] Mass Spectrometer of the Transit Time"

21(7),24(3)

AUTHORS: Luk'yanov, S. Yu., Podgornyy, I. M. SOV/56-37-1-4/64

TITLE: A Magnetic Trap With a Field Increasing Towards the Periphery (Magnitnaya lovushka s polem, narastayushchim k periferii)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 1, pp 27-32 (USSR)

ABSTRACT: The present paper gives results of investigations carried out of the behavior of a plasma produced by an electron beam (0.5 a, voltage up to 1 kv). The vacuum chamber was within such a coil system causing the magnetic field; each coil consisted of 30 windings of a copper tube and was cooled by running water. The maximum current passing through the coil was 350 a. The magnetic field H_2 within the magnetic barrier attained a maximum of 500 Oe, and on the periphery of the chamber a maximum of 1,250 Oe (chamber axis - z - 120 cm, width of the barrier 12 cm)(Figs 1,2). Current measurement was carried out by means of a probe. The first experiments were carried out for the purpose of investigating the current distribution on the wall in the longitudinal direction (parallel to z) in dependence on the gas pressure in the

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chamber. Direct measurements showed that charged particles reach the wall only through annular slits in the magnetic field. Figure 3 shows the variation of the electron current on the probe, which has a wall potential, and during the motion of which along the chamber axis, hydrogen pressure in the chamber amounted to $5 \cdot 10^{-5}$ torr. The figure shows two steep current maxima at the gaps. Figure 4 shows the dependence of the current passing through the magnetic slits on the hydrogen pressure in the chamber. The curves have a particularly sharp pressure dependence for slits located far from the injector. Experiments carried out with an orientated probe showed a certain anisotropy in the flux distribution of the charged particles. Figure 6 shows the experimentally recorded dependence of the effective slit width δ on the magnetic field voltage (200-1,100 Oe) for electron energies of 100, 200, and 400 ev in the primary beam at a hydrogen pressure of $2 \cdot 10^{-5}$ torr. At $H > 800$ Oe, the slit width is found to be independent of H and of primary electron energy, and it amounts to about 0.4 mm. With decreasing H the slit width increases considerably especially in the case of high primary energies.

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For 400 ev, an exponential increase is thus found with falling H; in the case of H = 200 Oe, $\delta > 5$ mm. In conclusion, the authors discussed a probable explanation of the observed dependence $\delta(H)$. They thank L. A. Artsimovich, R. Z. Sagdeyev, and O. B. Firsov for their interesting discussions, and V. N. Sumarokov for his assistance in carrying out the experiments. There are 6 figures and 3 Soviet references.

SUBMITTED: February 1, 1959

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AUTHORS: Koval'skiy, N. G., Podgornyy, I. M., Stepanenko, M. M.

TITLE: Investigation of Fast Electrons in Strong Pulse Discharges

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 5, pp. 1439-1445

TEXT: At first, the authors describe the experimental arrangement and the method of measurement. The apparatus used was essentially similar to the pulse generator used for earlier investigations. The condenser bank consisted of 12 condensers of the type ИМ-3/50 (IM-3/50) with a total capacity of 36 μF. The discharge chamber was of porcelain, and had a length of 1 m and a diameter of 17 cm. During one discharge, the condenser bank supplied up to 45 kv. The discharge chamber was evacuated after each discharge and filled anew with gas (hydrogen, deuterium, or spectrally pure inert gases). The authors (partly in collaboration with others) had observed in earlier studies (Refs. 1-4) the appearance of a hard X-radiation and an acceleration of electrons (up to (300±20)kev for an initial discharge voltage of 40 kv) while investigating controlled

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thermonuclear reactions. Following these studies, the authors investigated the dependence of the maximum electron energy on the parameters of the discharge. The dependence of the limiting energy in the electron spectrum on the pressure of hydrogen in the discharge chamber (in the range $4\cdot10^{-3}\leq p_0 \leq 6\cdot10^{-1}$ torr) was determined by means of a magnetic spectrograph, and is shown in Fig. 1. In the range $2\cdot10^{-2} < p_0 < 1.3\cdot10^{-1}$ torr the curve shows a high maximum; the peak value of the electron energy is 295kev. The pressure dependence of the electron energies is analogous to the pressure dependence of neutron yield in discharges in deuterium, but deviates somewhat from the pressure dependence of the intensity of the hard X-radiation. The dependence of the limiting electron energy (E_0) on the initial voltage U_0 was also investigated (for $p_0 = 7\cdot10^{-2}$ torr, in H_2). Fig. 2 shows $E_0(U_0)$ in the range $30 < U_0 \leq 45$ kv. E_0 steeply rises with U_0 up to $U_0 = 40$ kv, and then falls. Further, E_0 was determined as a function of the strength of an external magnetic field in the range $0 < H < 150$ oe (Fig. 3). E_0 falls from 300 to 150 kev when the magnetic field increases from 0 to 38 oe; with a further increase of the field, E_0 becomes less IX

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than 50 kev. The radial distribution of the fast electrons accelerated along the discharge axis was studied by means of a special collimator schematically shown in Fig. 4. Fig. 5 shows the radial distributions determined for $p_0 = 7\cdot10^{-2}$ torr and three different thicknesses of the Al filter (30, 54, and 75μ). Electron energies of 80, 110, and 140 kev, respectively, correspond to these thicknesses. The half width of the distribution curve decreases with increasing thickness of the filter. This shows that the non-equilibrium electron group is accelerated in the immediate neighborhood of the axis. Numerical results of the investigations of fast electrons in H_2, D_2, and the inert gases are collected in a table. The investigations led to the conclusion that in high-power pulse discharges there exist two groups of non-equilibrium electrons; the first group having energies of up to 100 kev is accelerated by the electric fields occurring with the pinch effect, while the second group, which has energies of up to 300 kev, is accelerated in the local electric fields resulting from instabilities of the plasma column. The authors thank S. Yu. Luk'yanov for discussions of the results. There are 5 figures, 1 table, and 8 references: 7 Soviet and 1 Italian.

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ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo **universiteta** (Institute of Nuclear Physics of Moscow State University)

SUBMITTED: December 19, 1959

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